

DESCRIPTIONMETHOD AND APPARATUS FOR TRAILER JACK MOUNT

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Background of the Invention

Towed trailers, such as utility trailers or camper trailers, are in wide spread use in this country and worldwide. Individuals who use these types of trailers often move them from location to location on a frequent basis. Towed trailers typically have wheels and a hitch mechanism to allow them to be attached to a towing vehicle and moved easily. The hitch mechanism normally will employ a tongue to engage a vehicle's hitch and a stabilizer, or trailer jack, which allows the trailer to be supported while disengaged from the towing vehicle.

Towed trailers are typically purchased with a trailer jack installed at the point of manufacture. The trailers jacks typically have a flange, or a mounting bracket integrated with the jack which allows the jack to be mounted to the trailer. The height of the trailer jack is normally adjustable by means of a hand crank. The adjustable trailer jack allows an individual to adapt the jack to differing terrain and use conditions. For example, in typical operation, an individual with a utility trailer will tow the trailer to the desired site. In order to release the towing vehicle, the individual will then crank the trailer jack until the jack meets the ground and raises the trailer's tongue free from the towing vehicle's hitch. The individual is then free to drive the towing vehicle away and the trailer is supported by the trailer jack. In order to tow the trailer again, the process is reversed, requiring the individual to crank the jack such as to lower the trailer's tongue onto the vehicle's hitch and continue cranking the jack until the lowest portion of the jack is high enough off the ground to prevent the jack from hitting the ground during transport.

Thus, as can be see by the typical mode of operation of trailer jacks, a significant amount of time and energy can be expended by the individual in cranking the jack from the up, or travel, position to the down, or supporting, position and vice versa. Additionally, it is

important that when the jack is in the up position the jack is sufficiently high enough off the ground, to avoid damage during travel.

Accordingly, there is a need for a trailer jack apparatus and method which allows an individual to quickly and easily transition a jack from the up position to the down position and vice versa. Also, as there are many existing trailers in use which currently have jacks, there is a need for an apparatus and method which can allow existing jacks to be retrofitted with an apparatus allowing the jacks to quickly be transitioned from the up position to the down position and vice versa.

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Summary of the Invention

The subject invention relates to a method and apparatus for a trailer jack mount. The subject invention also pertains to a method and apparatus for providing a trailer jack mount for use with towable trailers. The subject apparatus can also enable the mounting of a trailer jack to a trailer such that the trailer jack can quickly transition up or down relative to the trailer. In a specific embodiment, the subject invention includes a first piece mountable to a trailer and a second piece to which a trailer jack can be secured. In this embodiment, the subject apparatus also includes means for securely attaching the second piece to the first piece and allowing the second piece to pivot relative to the first piece. Advantageously, the subject invention can either be retrofitted to an existing trailer with jack, or installed at original manufacture. In another specific embodiment, the second piece is slidably attached to the first piece to allow an individual to adjust the height of the trailer jack.

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The subject method and apparatus can be used to shorten the time required to transition a trailer jack from an up, or travel position, to a down, or support position , and vice versa. With respect to typical crank jacks, an individual must manually crank the trailer jack the entire distance between the up and down or down and up positions. The subject invention can significantly reduce the amount of cranking needed to transition the jack between the up and down positions and vice versa. The subject invention is advantageous in situations where an individual needs to frequently move a towable trailer, such as a utility

trailer used to tow equipment to and from different job sites, because the time needed to mount and dismount the trailer is significantly shortened over currently available solutions.

Brief Description of the Drawings

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Figure 1A shows the tongue of a typical trailer.

Figure 1B shows the bottom portion of an embodiment of the pivot-type trailer jack mount in accordance with the present invention.

Figure 1C shows the top portion of an embodiment of the pivot-type trailer jack mount in accordance with the present invention.

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Figure 1D shows a typical trailer jack for use with the present invention.

Figure 2A shows a typical trailer jack for use with the present invention.

Figure 2B shows the bottom portion of an embodiment of the slide-type trailer jack mount in accordance with the present invention.

Figure 2C shows the top portion of an embodiment of the slide-type trailer jack mount in accordance with the present invention.

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Detailed Disclosure of the Invention

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The subject invention relates to method and apparatus for a trailer jack mount. The subject invention also pertains to a method and apparatus for providing a trailer jack mount. The subject invention can enable the mounting of a trailer jack such that the jack can be easily and rapidly transitioned between an up, or travel, position and a down, or support position. The subject invention is advantageous in situations where an individual desires to move a trailer frequently, as the subject invention permits the trailer to be readied for transport in a shorter period of time than can be realized with typical trailer crank jacks. In a specific embodiment, the subject invention can be retrofitted to a trailer with an existing jack, such that the jack is then pivotally attached to the trailer. Alternatively, the subject invention can be integrated into a new trailer prior to retail sale in order to utilize the advantages herein disclosed.

Figures 1B and 1C illustrate an embodiment of a movable trailer jack mount in accordance with the subject invention. The trailer jack mount can be constructed with any number of parts, but preferably is made from two portions, a bottom portion **10**, as shown in Figure 1B and a top portion **22** as shown in Figure 1C. The bottom portion **10** can have a trailer mounting structure **12** and transitioning structure **16**. Transitioning structure **16** can be a separate piece attached to the mounting structure by, for example, fasteners or by weld, or can be integral with the mounting structure. In trailers commonly referred to as utility trailers, the trailer typically has a tongue **1** which contains an opening designed to accept a standard trailer jack **4**. Figure 1A shows a typical trailer tongue **1** and Figure 1D shows a typical trailer jack **4**. The jack **4** typically has a flange **6** which allows the jack to be mounted to the trailer tongue **1**. When the jack **4** is mounted to the tongue **1** in this way the jack handle **8** can then be turned in order to raise or lower the trailer tongue with respect to the ground due to the foot **3** of the jack raising or lowering relative to the body of the jack. The foot **3** of the jack can have, for example, a wheel to contact the ground and allow the trailer to be rolled.

In a preferred embodiment, after the jack is removed from the trailer tongue, the bottom portion **10** of the subject mount can be secured to the trailer tongue **1**. Preferably, the bottom portion **10** is removably secured to the trailer through attachment structure **9** such as screws, bolts, or pins. In order to aid in securing the bottom portion **10**, the trailer mounting structure **12** can have several holes **14** matched to the holes **5** located in the trailer tongue **1**. Alternatively, the bottom portion **10** can be attached permanently to a trailer through welding or other adequate means of permanently affixing the bottom portion **10** to a trailer.

The transitioning structure **16** of the bottom portion **10** preferably extends perpendicular to the trailer mounting structure **12**, although other degrees of declination will not affect functionality of the subject invention. In a preferred embodiment, the transitioning structure **16** provides means for the top portion **22** to be pivotally connected such that the top portion **22** can be pivotally transitioned between a plurality of positions with respect to the bottom portion **10**. In this embodiment, the transitioning structure **16** can comprise one or

more extending portions, such as extending portions **16a** and **16b** as shown in Figure 1B. The extending portions **16a** and **16b** provide a region in between where the top portion **22** can be attached. Alternatively, the transitioning structure **16** can have a larger number of extending portions without affecting the functionality of the invention.

5 In the specific embodiment of the subject invention shown in Figures 1B and 1C, the top portion **22** can have a jack mounting structure **24** and a pivoting arm **26**. In a preferred embodiment, the jack mounting structure **24** can have a mounting aperture **28** sized to accept a desired trailer jack **4**. Alternatively, jack mounting structure **24** can be cut away in a similar fashion to jack mounting piece **50** shown in Figure 2C. Such a cut away may allow easier 10 mounting of the jack. The jack mounting portion **24** can also contain mounting holes **30** to secure the trailer jack **4** to the top portion **22**, such as holes matched to the trailer jack mounting plate **6** which is normally built into to the typical trailer jack used in the art. The mounting holes **30** can be used to removably secure the trailer jack **4** to the top portion **22** through the use of screws, bolts or other means suitable for the purpose. Alternatively, the 15 trailer jack **4** can be permanently attached to the top portion **22** by, for example, welding.

The extending portions **16a** and **16b** can further have a pivot aperture **20**. An aperture **20** can be used to house a pivot axle **21**, allowing the top portion **22** to freely pivot. Thus, the bottom portion **10** serves to secure the subject invention to a trailer as well as providing structures to allow the top portion **22** to pivot relative to the bottom portion **10**. 20 To aid in securing the top portion **22** in one of at least two positions relative to the bottom portion **10**, the extending portions **16a** and **16b** can have a lock aperture **18**. This aperture can receive a retention structure **23** to secure the top portion **22** when the top portion **22** has been pivoted between different positions of use.

25 The pivoting arm **26** of the top portion **22** preferably contains at least one axle aperture **32** and at least two lock apertures **34** and **36**. It is understood that any number of combinations of axle apertures and lock apertures can be used without affecting the functionality of the subject invention. The pivot arm **26** can interfit with the extending portions **16** of the bottom portion **10** to allow a pivoting axle **21**, such as a pin or bolt to be passed through the axle aperture **32** of the top portion **22** and the pivot aperture **20** of the

extending portions **16a** and **16b**. Alternatively, the top portion **22** can contain any number of pivot arms **26** corresponding to the plurality of arrangements of extending portions **16a** and **16b** available for the bottom portion **10**. The pivot arm **26** can further contain a retention structure **23** such as a bolt or pin. The retention structure **23** can be passed through, for example lock aperture **34** of the top portion **22** and lock aperture **18** of the transitioning structure **16** in order to lock the top portion **22** into place. In a specific embodiment, retention structure **23** is movably attached to transitioning structure **16** such that retention structure **23** can be pulled out to release pivoting arm **26** and pushed in to engage pivoting arm **26**, and when let go will remain attached to transitioning structure **16**. Retention structure **23** can be spring loaded such that when let go it automatically pushes toward pivoting arm **26**. Other mechanisms can also be used to adjustably secure top portion **22** in position relative to bottom portion **10** as well, such as a ratchet mechanism or a push-button release mechanism. Thus, the top portion **22** provides structures which allow a trailer jack **4** to be mounted to the top portion **22** as well as structures which allow the top portion **22** to be pivotally mounted to the bottom portion **10**.

A preferred method of providing a pivotable trailer jack mount is now discussed. The subject invention can be installed onto a trailer either prior to retail sale or by a user to retrofit a trailer with an existing jack attached. In this example, the subject invention is described as being retrofitted onto a trailer with an existing jack attached. It is understood that this is an illustration, not intended to be limiting in the application of the subject invention. For example, a similar process could be employed by a trailer manufacturer or distributor in order to integrate the subject invention into a trailer prior to retail sale.

An individual wishing to utilize the subject trailer jack mount can remove the trailer jack **4** from the trailer tongue **1**. The individual can then place the trailer jack **4** into the mounting aperture **28**, or other means, of the top portion **22**. The trailer jack **4** can then be secured, permanently or removably to the top portion **22** using, for example, screws inserted through the trailer jack mounting plate **6** and the mounting holes **30** of the top portion **22**. The individual can then install the bottom portion **10** of the trailer jack mount onto the trailer tongue **1** either permanently or removably. Once the bottom portion **10** is mounted, the

individual can install the top portion **22** and trailer jack **4** portion by placing the pivoting arm **26** of the top portion **22** in between the extending portions **16a** and **16b** of the bottom portion **10**. A pivot axle **21** can then be inserted through the pivot apertures **20** of the bottom portion and the axle aperture **32** of the top portion **22**.

5 The jack **4** shown in Figures 1D and 2A have a handle **8** which can be cranked to raise and lower the foot **3** of the jack with respect to the lower portion **7** of the jack **4**. The top portion can be transitioned between any number of positions relative to the bottom portion **10**. Accordingly, the subject invention can allow the lower portion **7** of the jack, and therefore foot **3** of the jack **4**, to be raised or lowered with respect to the ground by moving the top
10 portion **22** with respect to the bottom portion **10**, in addition to being raised or lowered by the cranking of handle **8**. Furthermore, raising or lowering the foot of the jack via the subject jack mount can be much quicker than cranking the handle.

15 In the embodiment shown in Figures 1B and 1C, the subject jack mount has two settings, an up, or travel, position and a down, or supporting, position. In the up position, the lower portion **7** of the jack **4** can be positioned upward relative to the ground, thus preventing the foot **3** of the jack **4** from striking the ground when the trailer is in motion. In the down position, the foot **3** of the jack **4** can contact the ground, stabilizing and supporting the trailer while separated from the towing vehicle. In order to hold the position of the jack **4**, a retention structure **23**, such as a bolt or pin can be employed. In the up position, for
20 example, the retention structure **23** can be inserted through the lock apertures **18** of the extending portions **16a** and **16b** and the lock aperture **36** of the pivot arm **26** which corresponds to the up position. Similarly, in the down position, a retention structure **23** can be inserted through the lock apertures **18** of the extending portions **16a** and **16b** and also through the lock aperture **34** corresponding to the down position.

25 Figures 2B and 2C illustrate an alternative embodiment of a trailer jack mount in accordance with the subject invention. With respect to this embodiment, Fig. 2B shows a trailer mounting portion **40** mountable to a trailer. The mounting portion **40** can have a mounting structure **42** and a mounting post **44**. The mounting structure **42** can be mounted to a trailer permanently or, alternatively, removably mounted using means such as bolts, pins

or rivets passed through mounting apertures 43. The mounting post 44 is preferably permanently attached to the mounting structure 42, but alternatively can be detachably mounted using any means common in the art. The mounting post 44 as shown in Figure 2B has a circular cross-section. Other cross-sectional shapes can also be incorporated. For example, a square cross-sectional shape can be used to keep the mounting collar 60 from rotating with respect to the mounting post 44. The mounting post 44 preferably extends substantially perpendicular to the mounting structure 42, although non-perpendicular orientation does not detract from the functionality of the subject invention. The mounting post 44 can have several post lock apertures 46 located along the length of the mounting post 44.

The post lock apertures 46 can be used to communicate with a locking device 48. The locking device 48 can be made from any material suitable to withstand the load involved in supporting a trailer jack, such as steel, composite, or wood. The locking device 48 can be constructed from any type of structure, such as a pin, bolt, screw or wood peg. Preferably, the locking device 48 is a metal pin. In an alternative embodiment, the locking device 48 can be a spring-loaded pin. The locking device 48 can be of any shape, such as round or square, provided that the chosen shape corresponds with the shape of the post lock apertures 46 to facilitate communication between the two elements.

Fig. 2C illustrates a jack mounting portion 50 to which a jack can be mounted in accordance with the subject invention. The jack mounting portion 50 can have a mounting structure 52 and a slide-collar portion 58. The mounting structure 52 can have means for accepting a trailer jack 54, such as indentations, grooves, or apertures. In the present embodiment, the mounting structure 52 has an indentation sized to accept a trailer jack 4. The mounting structure 52 can also contain jack attachment structures 56 to secure a trailer jack 4 to the mounting structure 52.

The slide-collar portion 58 of the illustrated embodiment can contain a mounting collar 60 and any number of mounting apertures 62. The mounting collar 60 can be used to slidably attach the jack mounting portion 50 to the trailer mounting portion 40 by interfitting over the mounting post 44. The embodiment shown in Figures 2B and 2C utilizes one mounting post 44 and one mounting collar 60, but it is understood that any combination of

mounting posts 44 and mounting collars 60 can be used without affecting the functionality of the invention. For example, there could be two mounting collars 60 attached to an elongated slide-collar portion 58 in order to further lessen the side-to-side movement of the trailer jack 4 when installed. Alternatively, there could be two or more mounting posts 44 along with any number of mounting collars 60. Further, it is contemplated to switch the position of the mounting post 44 and the mounting collar 60. In this fashion, the mounting post 44 can be attached to the mounting structure 52 of jack mounting portion 50 to which the trailer jack 4 is attached and the mounting collar 60 can be attached to the mounting structure 42 of trailer mounting portion 40 which is attached to the trailer tongue. In the specific illustrated example, the mounting collar 60 is of a circular design. It is also contemplated to produce mounting collars 60 and corresponding mounting posts 44 of different cross-sectional shapes, such as square or triangular.

The collar mounting apertures 62 can be used to slidably secure the jack mounting portion 50 to the mounting post 44 through the use of a locking device 48. For example, the mounting collar 60 can have any number of collar mounting apertures 62 which, when the mounting collar 60 is slidably mounted onto the mounting post 44, will align with a desired post mounting aperture 46 located on the mounting post 44. Once aligned, a locking device 48, such as a pin can be inserted through the post mounting apertures 46 and the ring mounting apertures 62 to lock the jack mounting portion 50 into a desired position. In the illustrated example, the locking device 48 is a removable pin which is fully detachable from the apparatus. It is, however, contemplated to use other means which are not fully detachable from the subject apparatus, such as a spring loaded device attached to the slide collar portion 58. In using the spring loaded device, a user can pull back on the spring loaded device, thereby pulling the device clear of the post mounting aperture 46, allowing the jack mounting piece 52 to slide along the mounting post 44 to a desired aperture alignment. The spring loaded device can then push into post mounting aperture 46, be released, locking the apparatus in place. The spring loaded device is provided as an example of alternative structures contemplated for use in the subject invention and is not intended to be limiting in any respect.

It should be understood that the example and embodiments described herein are for illustrative purposes only and that various modifications or changes in light thereof will be suggested to persons skilled in the art and are to be included within the spirit and purview of this application and the scope of the appended claims.